

REMARKS

The Office Action of November 26, 2008 has been carefully reviewed, and this response addresses the Examiner's concerns.

I. STATUS OF THE CLAIMS

Claims 1-22 are currently pending in this application.

Claims 1, 4, 6-7, 9, 11-12, 14 and 16-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Thiers (US 6,766,622);

Claims 2-3, 5, 8, 10, 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thiers; and

Claims 15 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thiers in combination with Moriau et al. (US 6,006,486).

Claims 5 and 19 are canceled. Claims 1, 2, 6, 7, 15, 19-22 are amended. Claims 23 and 24 are added.

Support in the specification for the amendments to claims 1-22

Amendments to claim 1 finds support in paragraphs [0007] and [0023] of the specification/published application, as well as in Figs. 2 and 6. Amendments to claim 2 finds support in the language of claim 5. Claims 6, 7, 15, 19-22 are amended to provide proper antecedent basis and such amendments to find support in the original claims.

Support in the specification for new claims 23-24

The language of the new claims 23 and 24 are based on the language of claim 1 as originally filed and in the specification on page 5, lines 1-22, as well as Figs. 4-6 and their description.

II. THE 35 U.S.C. 102 REJECTION

Claims 1, 4, 6-7, 9, 11-12, 14 and 16-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Thiers (US 6,766,622) (the '622 patent).

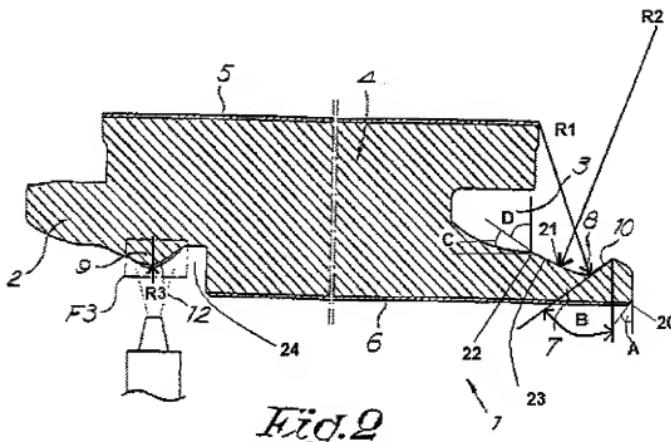
Applicant respectfully asserts that the claimed inventions are not anticipated by the '622 patent based on the remarks given below.

In order to illustrate the differences between the Applicant's claimed invention and the '622 patent, the teachings of the '622 patent are summarized below and compared to the Applicant's claimed invention.

The '622 patent has as objective a floor covering panel in which "the creaking between the floor panels is avoided whereas over the long term the wear and tear of the tongue-and-groove connection also is limited." According to the '622 patent, "this object is achieved in that a non-metallic sliding agent is applied on at least one of the panels at least at the location where the floor panels cooperate with each other, generally at the tongue-and-groove connection." (col. 1, lines 52-63, the '622 patent). The '622 patent does not define an angle at which the bearing surfaces of the lower part of the lip and the lower part of the panel from the side of the circular protrusion are inclined. Neither does the '622 patent refer to any acute angle. (An acute angle being an angle of less than 90 degrees. See, for example, the definition in <http://mathworld.wolfram.com/AcuteAngle.html>.) Further more, in Figures 2, 4-7 and 9 of the '622 patent, the corresponding angle is shown as a 90 degree (right) angle.

Applicant respectfully states that there is no teaching in the '622 patent of "a lower part of the lip (8) and at a lower part of the floor panel (1) from a the side of the circular protrusion (7) having second bearing surfaces (9') inclined in relation to a vertical plane into one direction, at a first acute angle (α);each of said second bearing surfaces (9') being substantially parallel to each other;" or "the bearing surface, the first radius, the third radius and the .first acute angle being selected to ensure that, when one floor panel is coupled to another floor panel, said one floor panel and said another floor panel can displace freely when any changes in humidity occur; whereby possibility of warping of a floor or the destruction of the couplings is substantially eliminated."

Applicant respectfully state that the '622 patent does not describe or refer to an acute angle and that the angle A proposed by the Examiner (shown below in a modified version of Fig. 2 of the '622 patent) does not result in bearing surfaces (since the surfaces of interest in Fig. 2 below are not parallel and one surface could not support the force transmitted by the other) and, furthermore, the surfaces of interest in Fig. 2 below are not parallel.



(Fig. 2 above is a modified version of Fig. 2 in the '622 patent)

Applicant respectfully states that the '622 patent does not teach or disclose "the bearing surface (9) of the lip (8) at the longer arm of the groove (5) being concave on an arc with a first radius (r_1), a point of engagement of which is situated at an upper border of the floor panel (1), the protrusion (7) of the groove tongue (6) having, in cross-section, the form of a circular section with a third radius (r_3) which is shorter than the first radius, and a lower part of the lip (8) and at a lower part of the floor panel (1) from the side of the circular protrusion (7) having second bearing surfaces (9') inclined in relation to a vertical plane into one direction, at a first acute angle (α); each of said second bearing surfaces (9') being substantially parallel to each other; the bearing surface, the first radius, the third radius and the first acute angle being selected to ensure that, when one floor panel is coupled to another floor panel, said one floor panel and said another floor panel can displace freely when any changes in humidity occur," all of which are limitations of amended claim 1.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v.*

Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP 2131.

Applicant respectfully states that Claims 1, 4, 6-7, 9, 11-12, 14 and 16-17 are not anticipated by the '622 patent.

III. THE 35 U.S.C. 103 REJECTIONS

Claims 2-3, 5, 8, 10, 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thiers; and

Claims 2-3, 5, 8, 10, 13 and 18 are dependent on claim 1. As stated above, the '622 patent does not teach or disclose at least one limitation of claim 1. Since the object of the '622 patent is to provide a floor covering panel in which "the creaking between the floor panels is avoided whereas over the long term the wear and tear of the tongue-and-groove connection also is limited," rather than insensitivity to humidity, Applicant respectfully states that the '622 patent does not suggest the missing limitations.

As the Examiner states in the Office Action, the '622 patent does not disclose "the values of the first, second, third, and fourth acute angles, as well as the ratios of the radii." The prior art, the '622 patent, teaches a floor covering panel in which "the creaking between the floor panels is avoided whereas over the long term the wear and tear of the tongue-and-groove connection also is limited." The present claimed invention recites a floor panel such that that "the panels can displace freely when any changes of wood humidity occur, whereby the possibility of the warping of the floor or the destruction of the couplings is eliminated." (claim 1 and par. 7, specification/published application). The values of the first, second, third, and fourth acute angles, as well as the ratios of the radii are chosen to ensure that "the panels can displace freely when any changes of wood humidity occur, whereby the possibility of the warping of the floor or the destruction of the couplings is eliminated."

The number of possibilities for "the values of the first, second, third, and fourth acute angles, as well as the ratios of the radii" are practicality infinite. (The possible number of angles can be related to the number of points in an arc segment and the number of points in an arc segment is a countable infinity.) This is not a situation where there are a finite number of identified, predictable potential solutions. One of ordinary skill in the art, faced with such a

tremendously large number of possible configurations, would not have a reasonable expectation of success in arriving at the values of the first, second, third, and fourth acute angles, as well as the ratios of the radii of the claimed invention by trying, at random, different values.

The designed recited in claim 1 and the choice of values of the first, second, third, and fourth acute angles, as well as the ratios of the radii recited in the dependent claims yield unexpected results. The '622 patent does not teach or suggest floor panels that are insensitive to humidity so that the possibility of the warping of the floor due to humidity or the destruction of the couplings due to humidity is eliminated. The claimed invention yields floor panels that are insensitive to humidity so that the possibility of the warping of the floor due to humidity or the destruction of the couplings due to humidity is eliminated. In the claimed invention, “[t]he forced displacing of the panels, as assembled to a floor plate, each other due to the changes of wood humidity, when the microclimate in a room changes, is stabilized by the pressure of the circular protrusion upon the bearing surface of the lip at the longer arm of the groove. The lip transmits the load onto the second bearing surfaces at the lower part of the panel, causing controlled movement of the circular protrusion and thereby a light drafting apart of the panels in a direction parallel to the underside. With the decrease of wood humidity the panels revert to the initial position without negative consequences in the form of the loss of rigidity of the floor.” (par. 7, specification/published application) These results are totally unexpected in view of the prior art. These results are “a marked improvement, over the results achieved under other ratios, as to be classified as a difference in kind, rather than one of degree.” *In re Waymouth*, 499 F.2d 1273, 1276, 182 USPQ 290, 293 (CCPA 1974); MPEP 716.02.

Applicant rebuts the presumption of obviousness since the claimed invention exhibits “new and unexpected results relative to the prior art.” *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1322, 73 USPQ2d 1225, 1228 (Fed. Cir. 2004); MPEP 2144.05.

Applicant also states that there are secondary indicia of nonobviousness since the claimed invention satisfies an unmet need (as stated in par. 5 of the specification/published application) and unexpected results are obtained.

In the attached translation of a research report from the Wood Technology Institute (Poland) (report No. U-91-BDz/2005, included in the APPENDIX) test results are presented that indicated that the floor panel of the present application rarely show complete disconnection of

coupling while showing improved mitigation of tensions caused by swelling as a result of humidity increase.

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." (MPEP 2143)

For the above reasons, and since the prior art reference does not teach or suggest all the claim limitations, Applicant respectfully states that a *prima facie* case of obviousness has not been established for Claims 2-3, 5, 8, 10, 13 and 18.

Claims 15 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thiers in combination with Moriau et al. (US 6,006,486) (the '486 patent).

Claim 15 depends on claim 1; claim 19 depends on claim 7; claim 20 depends on claim 9; claim 21 depends on claim 11 and claim 22 depends on claim 16. As stated above, the '622 patent does not teach or disclose at least one limitation of claim 1. Applicant respectfully states that neither the '622 patent nor the '486 patent teach or suggest "the bearing surface (9) of the lip (8) at the longer arm of the groove (5) being concave on an arc with a first radius (r_1), a point of engagement of which is situated at an upper border of the floor panel (1), the protrusion (7) of the groove tongue (6) having, in cross-section, the form of a circular section with a third radius (r_3) which is shorter than the first radius, and a lower part of the lip (8) and at a lower part of the floor panel (1) from the side of the circular protrusion (7) having second bearing surfaces (9') inclined in relation to a vertical plane into one direction, at a first acute angle (α); the bearing surface, the first radius, the third radius and the first acute angle being selected to ensure that, when one floor panel is coupled to another floor panel, said one floor panel and said another floor panel can displace freely when any changes in humidity occur," all of which are limitations of amended claim 1.

As in the '622 patent, the '486 patent does not define an angle at which the bearing surfaces of the lower part of the lip and the lower part of the panel from the side of the circular protrusion are inclined. Neither does the '622 patent nor the '486 patent refer to any acute angle.

Furthermore, in Figures 2-9 of the '486 patent, the corresponding angle is shown as a 90 degree (right) angle. In Figures 9-10 of the '486 patent, a somewhat related angle is shown in which a surface of the lower part of the lip is inclined at an acute angle (3) and a surface of the corresponding lower part of the panels from the side of the protrusion (2) is inclined at an obtuse angle, which makes it impossible for those two surfaces to be bearing surfaces. Therefore, Applicant respectfully states that neither the '622 patent nor the '486 patent teach or suggest all the limitations of amended claim 1. Since Claims 15 and 19-22 depend on claim 1, Applicant respectfully states that neither the '622 patent nor the '486 patent teach or suggest all the limitations of claims 15 and 19-22.

As stated above, neither the '622 patent nor the '486 patent has as objective providing a floor panel design that is insensitive to humidity variations. As such, the results obtained in the claimed invention are unexpected results. For the same reasons as presented above, Applicant respectfully states that a prima facie case of obviousness has not been established for Claims 15 and 19-22.

IV. CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully asserts that claims 1-24 are now allowable over the prior art and requests the Examiner to pass the case to issue.

Two new independent claims have been added. The Director of Patents and Trademarks is hereby authorized to charge the large-entity fee for two additional independent claims (\$440) and any underpayment of fees to or credit any overpayment of fees to Deposit Account No. 03-2410, Order No. 31815-101.

Application Serial No. 10/541,114
Response to Office Action dtd. 2/19/09
Response to Office Action of 11/26/08

In accordance with Section 714.01 of the M.P.E.P., the following information is presented in the event that a call may be deemed desirable by the Examiner:

ORLANDO LOPEZ (617) 345-3000

Respectfully submitted,
Marek Konstanczak, Applicant

Dated: February 19, 2009

By:


Orlando Lopez
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Application Serial No. 10/541,114
Response to Office Action dtd. 2/19/09
Response to Office Action of 11/26/08

APPENDIX

WOOD TECHNOLOGY INSTITUTE

WOOD SCIENCE AND APPLICATION DEPARTMENT

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RESEARCH REPORT

No. U-91 – BDZ/ 2005

Poznań, July 23, 2005

Subject of the research:

Examination of wood properties of glue-free connections of multi-layer floor covering elements.

Client's Name and Address:

BARLINEK S.A.
ul. Przemysłowa 1
PL 74-320 BARLINEK

1. Subject of the examination:

three layer floor covering elements

2. Description of primary test:

Client provided to examine on May 18, 2005 four types of three layer floor covering elements with couplings with locking devices (glue-free):

A – with VALINGE coupling of KÄHRS company, three layer board consisting of beach wood top layer, 4 mm thick, middle layer made of conifer wood strips, approximately 25 mm wide and approximately 9,5 mm thick, and bottom face veneer layer, approximately 1,5 mm thick of conifer wood; nominal dimensions of the board 2424x 200x 15 mm,

B –with UNICLICK coupling of BOEN company, three layer board consisting of beach wood top layer, 3,5 mm thick, middle layer made of conifer wood strips, approximately 26 mm wide and 8,5 mm thick and bottom conifer wood face veneer layer, approximately 2 mm thick, nominal dimensions of the board 2194x 138xx 14 mm,

C – with BARCLICK coupling of BARLINEK, three layer board consisting of beach wood top layer, 3,5 mm thick, middle layer made of conifer wood strips, approximately 27 mm wide

and 8 mm thick, and bottom conifer wood laths layer, approximately 3,5 mm thick and 75 mm wide, nominal dimensions of the board 2200x 208x 15mm,

D – with *BALTIC-LOCK* coupling of *BALTIC-WOOD*, three layer board consisting of beach wood top layer 3,5 mm thick, middle layer made of conifer wood strips, approximately 25 mm wide and 8,5 mm thick, and bottom conifer wood face veneer layer, approximately 2 mm thick, nominal dimensions of the board 2200x 182x 14 mm.

3. Range and methodology of the examination:

According to the client's order the following examinations have been carried out:

- 3.1. examination/ test/ measurement of destructive force at tensile strength test in direction perpendicular to coupling 100 mm wide.**
- 3.2. examination/ test/ measurement of force causing 0,2 mm gap between useable layers at tensile in direction perpendicular to coupling 100 mm wide.**
- 3.3. examination/ test/ measurement of destructive force at coupling resistance to three-point bending.**
- 3.4. verification of coupling behaviour in humid climate.**

The examination methodology according to paragraphs 3.1 and 3.2 was based on principles set out in *ISO/DIS* norm No. 24334 'Laminate floor coverings. Determination of locking strength for mechanically assembled panels.' The method of the examination is shown on picture 1. The speed of loading the samples is 1,0 mm/ min. The force causing the gap of 0,2 mm between coupled samples cut out from the boards was determined (measurement with feeler gauge) and the strength completely destroying extended coupling.

The examination according to the paragraph 3.3 was carried out adopting method defined in *PN-EN* norm No. 310:1994 'Wood-based panels. Determination resilience module at bending and bending resistance test.'

At width of the sample equal to length of tested coupling equal to 100 mm, applied the distance between supports equal to 220 mm and speed of loading was 10 mm/min. The destructive loading was applied from bottom layer (pic. 2).

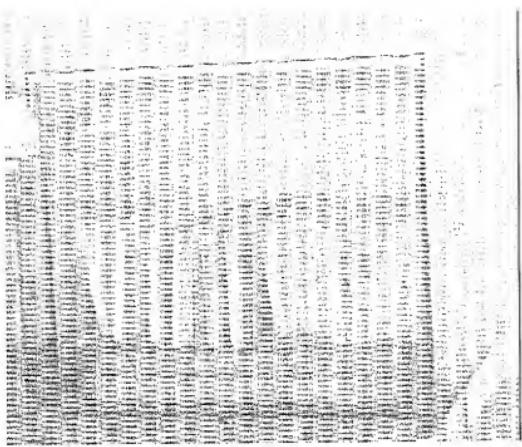
The verification of coupling behaviour in humidity climate (examination 3.4) consisted of placing coupling samples 100mm length in closed container 'above water surface' and observation of their behaviour and measurement of the offset (pic. 3). The observations and measurement of the offset were carried out after 21 days and nights from placing the samples in the container.



pic. 1



pic. 2



pic. 3

5. Examination results:

The examination results of coupling tensile strength and bending resistance are shown in chart 1. Typical sequence of destruction of the panel coupling at extending was similar to all panels and looked as follows (Fig. 1):

- proportionally to increase of applied force, gradual enlargement of the gap between edges of coupled panels;
- disproportionate to increased force further enlargement of the gap in connection with simultaneous partial middle layer wood crushing in areas of direct contact of both elements of the coupling and bending away of bottom layer in place of smallest section;
- complete disconnection of coupling, sometimes preceded with micro cracks (audible slight crackle) or macro cracks (noticeable with naked eye) along fibres of middle layer. Cracks up to complete disconnection occurred at the end of advanced part of groove ('nose' pic. 4) mainly in coupling *BALTIC-LOC* type and in some cases of coupling *VALINGE* type, rarely in coupling *BARCLICK* type and none in coupling *UNICLICK* type.

Chart 1

Examination results of tensile strength and bending resistance different types of lock couplings

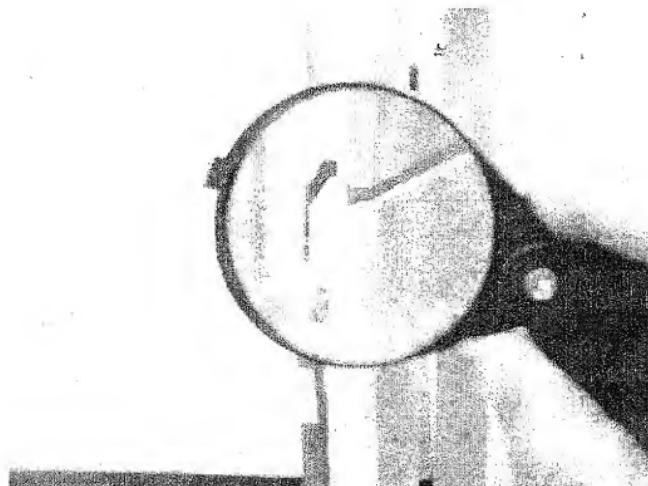
Examined property	Statistical parameter	Measurement unit	Type of coupling			
			VALINGE	UNICLICK	BARCLICK	BALTIC-LOC
Destructive force at extending in direction perpendicular to coupling 100 mm wide	X _{mdl}	kN	0,79	0,85	1,72	1,48
	X _{min}		0,56	0,59	1,33	1,06
	X _{max}		1,12	1,22	2,31	1,99
	s		0,16	0,17	0,30	0,22
The force causing gap of 0,2 mm at extending in direction perpendicular to coupling 100 mm wide	X _{mdl}	kN	0,56	0,53	0,42	0,80
	X _{min}		0,38	0,28	0,31	0,53
	X _{max}		0,86	0,77	0,59	1,24
	s		0,16	0,16	0,09	0,18
Destructive force at three-point bending of the coupling	X _{mdl}		2,70	4,03	4,30	4,04
	X _{min}		2,01	3,61	2,97	3,35
	X _{max}		3,37	4,94	5,66	4,56
	s		0,45	0,54	1,00	0,48

Key: X_{mdl} – middle value, X_{min} – minimal value, X_{max} – maximal value, s – standard deviation

Visibly the strongest tensile strength has coupling of *BARCLICK* type, however at the same time this coupling is most susceptible to mutual displacement of coupled panels. It is a feature of said coupling, clearly distinctive it from other couplings. Said feature can be expressed in numbers by relative proportion of the force causing gap of 0,2 mm and the force completely destroying coupling. In carried examination the proportions were as follows:

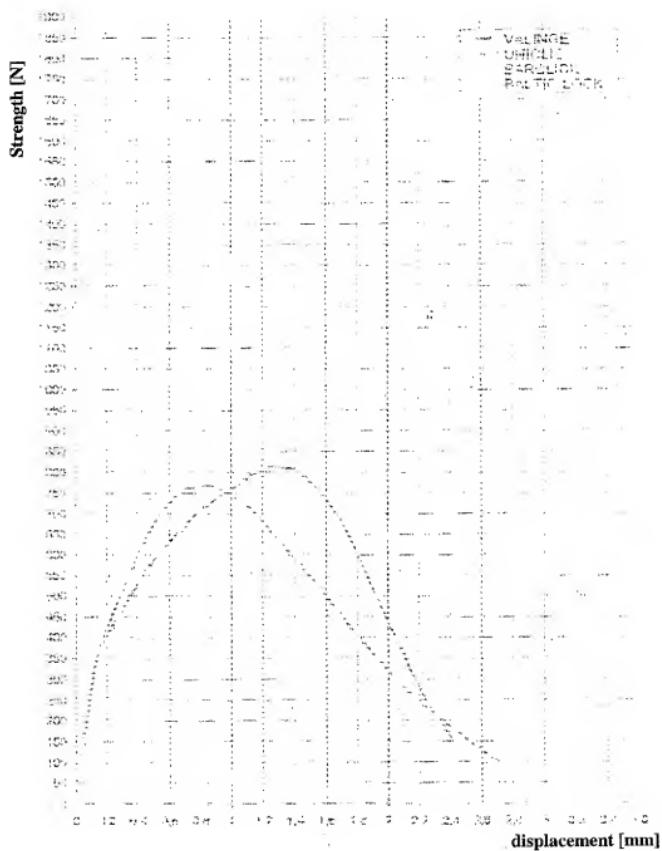
- a) *BARCLICK* - 320%
- b) *BALTIC-LOC* - 94%
- c) *UNICLICK* - 67%
- d) *VALINGE* - 46%

The highest bending resistance was noticed for *BARCLICK* coupling, slightly less for *BALTIC-LOC* and *UNICLICK* and definitely lowest for *VALINGE* coupling. The most probable cause of the fact that *VALINGE* coupling has the shortest tongue.



pic. 4

Fig. 1 Exemplary course of displacement in different types of lock couplings depending on the value of the tensile force (length of the coupling 100 mm)



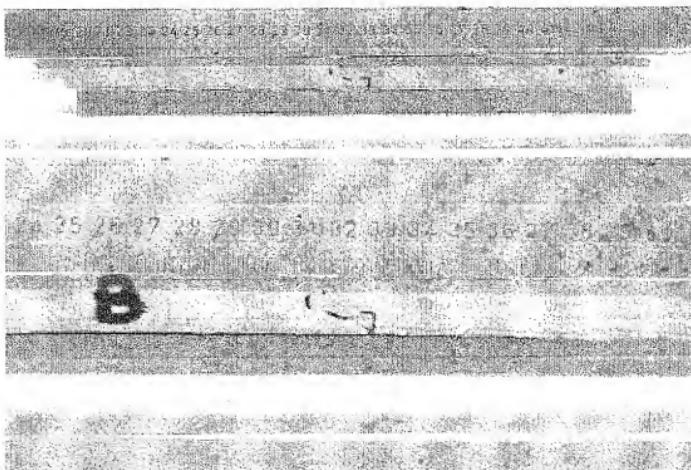
Similar geometry have pairs of couplings typé *BARCLICK (option C)* and *UNICLICK (option B)* also *VALINGE (option A)* and *BALTIC-LOC (option D)*. Those resemblances can result in similar panels deformation as a result of long term exposition to humid environment. In case of *VALINGE* and *BALTIC-LOC* couplings, coupled samples have bent in near-arc shape with maximum of arrow diffraction on the edges of joint. Those types of coupling probably do not compensate for swell on the width of top layer wood (beach wood transverse to fibres layout), it results in couplings and further in whole floor covering significant tensions, that may lead to irreversible offsets between panels or in extreme cases, especially with no appropriate dilatation interspaces, tearing off the panels from the base.

Different shape of diffraction was noted for panels with *UNICLICK* coupling and in particular for panels with *BARCLICK* coupling. In case of those types of couplings in point of edges adjoin occurred concavity, probably caused by deflected end of the top layer downwards from the groove side. Such diffraction probably helps to mitigate tensions caused with swell of top layer wood as a result of humidity increase. Initial values of offsets of all samples were close to 0,00 mm, however average values of the offsets between panel samples were for panels with couplings:

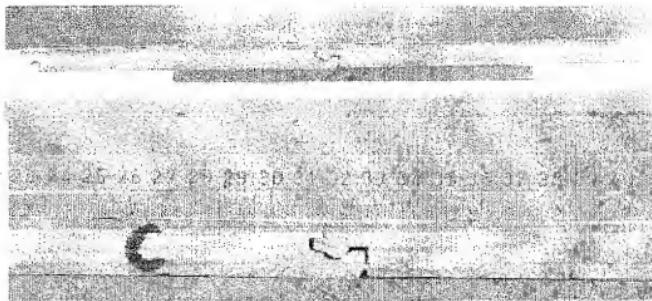
- a) *VALINGE* – 0,07 mm
- b) *UNICLICK* – 0,18 mm
- c) *BARCLICK* – 0,14 mm
- d) *BALTIC-LOC* – 0,21 mm



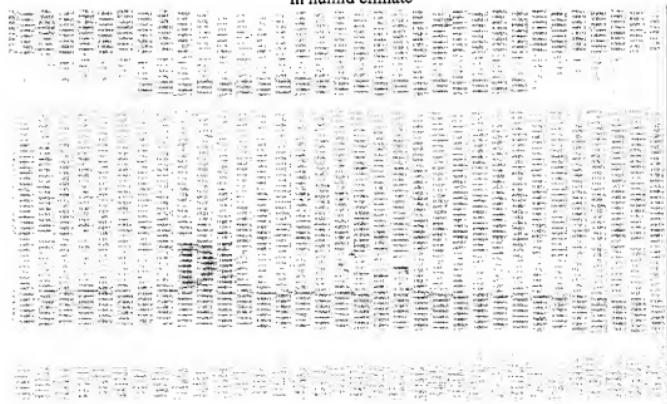
Pic. 5 Diffraction of panels with *VALINGE* coupling after 21 days and nights of seasoning in humid climate



Pic. 6 Diffraction of panels with *UNICLICK* coupling after 21 days and nights of seasoning in humid climate



Pic. 7 Diffraction of panels with BARCL/CK coupling after 21 days and nights of seasoning in humid climate



Pic. 7 Diffraction of panels with BATIC -LOCK coupling after 21 days and nights of seasoning in humid climate

ELABORATED BY

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